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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,664	09/29/2003	David Haase	EMC-03-100	2361

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EXAMINER	
FARROKH, HASHEM	
ART UNIT	**PAPER NUMBER**
2187	

DATE MAILED: 05/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/673,664	HAASE ET AL.	
	Examiner	Art Unit	
	Hashem Farrokh	2187	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-11,13-18,20 and 21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-11,13-18,20 and 21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

The instant application having application No. 10/673,664 has a total of 18 claims pending in the application; claims 1, 3-4, 6-8, 10-11,13-15, 17-18, and 20-21 have been amended; claims 5, 12, and 19 have been canceled; no new claims have been added.

INFORMATION CONCERNING CLAIMS:

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. Claims 1-4, 8-121, and 15-18 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-5, 8-12, and 15-19 of copending Application No. 10/679,726. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

2. Claims 1 of instant application (Application No. 10/673,664) are compared to claims 1 of copending application (Application No. 10/679,726) in the following table:

Application No. 10/679,726	Application No. 10/673,664
Claim 1: 1. In a data storage environment having a first volume of data denominated as the source being stored on a data storage system, and a second volume of data denominated as the clone and which has data content that is a copy of the data content of the source being stored on the data storage system or on another data storage system, a method of managing data content during a restoration of the source, the method comprising the steps of:	**Claim 1:** 1. In a data storage environment having a first volume of data denominated as the source being stored on a data storage system, and a second volume of data denominated as the clone and which has data content that is a copy of the data content of the source being stored on the data storage system or on another data storage system, a method of protecting the clone's data content during a restoration of the source, the method comprising the steps of:

restoring the source by copying data content from the clone to overwrite the data content of the source, allowing host reads and writes to the source during the restore;	restoring the source by copying data content from the clone to overwrite the data content of the source; and allowing host reads and writes to the source during the restore;
if preserving the data content of the clone is selected, then not allowing the data content of the clone to be overwritten by host writes during the restoring step.	preserving the data content of clone by not allowing it to be overwritten by host writes during the restoring step.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

*The copending Application (10/679,726) claims: "...*managing data content *..." (e.g., see claim 8, line 1). The instant Application (10/673,664) claims: "...*protecting the data content*..." (e.g., see claim 8, line 1). The specification defines:*

"this application generally related to data storage management, and more particularly to management related to copying or replication of data in a data storage environment" *(see lines 10-12 in page 2 of the specification).*

"Once data is replicated, copied, or otherwise backup it may be used for a recovery or restoration". *(Lines 7-8 in page 4)*

"...this invention is a system and method for protecting data during a recovery or restoration process." *(Lines 5-6 in page 4)*

Therefore, it can be interpreted that managing data includes protecting data and therefore obviousness-type double patenting rejection as indicated above would apply.

35 U.S.C. 101 reads as follows:

> *Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.*

Claims 8-11, 13-18, and 20-21 are rejected under 35 USC § 101 because the claimed invention is directed to non-statutory subject matter.

1. Claims 8-11, 13-18, and 20-21-are not limited to tangible embodiments. In view of applicants' disclosure, specification page 12, lines 10-18, the medium is not limited to tangible embodiments, instead being defined as including both tangible embodiments (e.g., page 12, lines 11-14) and intangible embodiments (e.g., page 12, lines 16-17). As such, the claim is not limited to statutory subject matter and is therefore non-statutory. Applicant may overcome this 101 rejection by changing the "...computer-executable logic..." *with* "...computer-executable logic stored in computer readable medium..."

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4, 11, and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

*3. In regard to claims 4, 11, and 18 the expression "...*extents of the clone that are different from the clone and the source" *is unclear. The specification does not explain this limitation.*

A clarification/correction is required.

Claim Rejections - 35 USC § 102

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-21 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,898,681 B2 to Young.

NOTE: The Young reference is a U.S. patent that claims the rejected invention. An affidavit or declaration is inappropriate under 37 CFR 1.131(a) when the reference is claiming the same patentable invention. See MPEP § 2306. If the reference and this application are not commonly owned, the reference can only be overcome by establishing priority of invention through interference proceedings. See MPEP Chapter 2300 for information on initiating interference proceedings. If the reference and this application are commonly owned, the reference may be disqualified as prior art by an affidavit or declaration under 37 CFR 1.130. See MPEP § 718.

4. In regard to claim 1, Young teaches:

"In a data storage environment having a first volume of data denominated as the source being stored on a data storage system **(column 4, lines 11-15; element 6 in Fig. 1)**, and a second volume of data denominated as the clone, which has data content that is a copy of the data content of the source being stored on the data storage system **(column 4, lines 11-15; element 8 in Fig. 1)**, a method operable on a computer system for protecting the clone's data content during a restoration of the source," **(e.g., see column 1, lines 61-64; column 7, lines 30-38; element 4 in Fig. 1).** *For example the master store or volume represents the first volume and shadow store or volume represents the clone volume recited in the claim. The shadow store contains the point in time copy of master data, which is used for controlling, or managing data during the restoration the master or the source. When data is overwritten, a new point in time copy is created and the previous point time is protected (e.g., not overwritten).*

"the method comprising the steps of:"

"restoring the source by copying data content from the clone to overwrite the data content of the source;" **(e.g., see column 11, lines 55-62).**

"allowing host reads and writes to the source during the restore;" **(e.g., see column 7, lines 18-38; column 8, lines 56-61).**

"preserving the data content of clone by not allowing it to be overwritten by host writes during the restoring step." **(e.g., see column 1, lines 61-64; column 20, lines 4-7).** *For example whether to overwrite or protect the point in time copy is user's selectable.*

5. In regard to claims 2, 9, and 16 Young teaches:

"wherein the source and the clone are each represented by respective first and second logical units." **(column 2, lines 35-40; column 4, lines 11-15).** *For example Young teaches that that a plurality of volumes are grouped together as a single logical device (e.g., source logical unit). The point in time copy of logical device is stored in shadow storage, which is in separate volumes, or logical device, which represents the clone logical unit recited in the claim.*

3. In regard to claims 3, 10, and 17 Young teaches: "wherein a protected restore map is used to track extents of the source that are modified during the restoring and preserving steps." **(e.g., see column 8, lines 22-40; Fig. 6a).** *For example when a block in the master store is overwritten (e.g., modified), a corresponding bit in the shadow bit map is set to logic 1.*

*4. In regard to claims 4, 11 and 18 the Examiner was not able to understand what the Applicant means by the expression: "...*extents of the clone that are different from the clone and the source". *The Examiner search the specification to find support for this limitation, but was unable to find explanation of this limitation. In the following rejection of these claims, the examiner assumes "...*extents of the clone that are different between the clone and the source" *(emphasis added).*

Referring again to claims 4, 11 and 18 Young teaches:

"wherein a clone delta map is used to track extents of the clone that may be different from the clone and the source." **(e.g., see column 8, lines 22-40; Fig. 6a).** *For example copy bit map which represent clone delta map recited in the claim is used to track the data blocks which are different between the master and shadow stores. A logic 1 in the*

copy bit map indicates that the corresponding data in the master store is different from the shadow store. When data copied from the master to the shadow store the corresponding bit in the copy bit map is being set to a logic 0 indicating that both master store and shadow store contain identical data

6. In regard to claims 6, 13 and 20 Young teaches:

"wherein the clone delta map is used to copy only extents that are different between the clone and its source during the restoration step." **(e.g., see column 10, lines 50-53; column 14, lines 26-31; Fig. 5a).** *For example setting of a bit in the bit map (e.g., a "logic 1") indicates that its corresponding data block in the shadow store is different from the one in the master store. The data blocks that have their corresponding bits in the bit map set will be copied to the master store during the restoration or recovery.*

7. In regard to claims 7, 14 and 21 Young teaches:

"wherein the protected restore map is coordinated with the clone delta map for processing of write data to the source." **(e.g., see column 6, lines 66-67; column 7, lines 1-43; Fig. 5a-5e).** *For example the shadow bit map coordinated with the copy bit map for efficient of processing of write data to the master store.*

8. In regard to claim 8, Young teaches:

A system **(column 22, lines 24-26)** for protecting data content during restoration of data from a second volume of data to a first volume of data," **(e.g., see column 1, lines 61-64; column 7, lines 30-38; element 4 in Fig. 1).**

"the system comprising:"

"a data storage system having a first volume of data denominated as the source being stored on a data storage system **(column 4, lines 11-15; element 6 in Fig. 1)**, and a second volume of data denominated as the clone and which has data content that is a copy of the data content of the source being stored on the data storage system;" **(e.g., see column 4, lines 11-15; element 8 in Fig. 1).**

"computer-executable program logic configured for causing a computer-executed the steps of:" **(e.g., see column 25, lines 1-31; column 27, lines 38-46).**

"restoring the source by copying data content from the clone to overwrite the data content of the source;" **(e.g., see column 11, lines 55-62).**

"allowing host reads and writes to the source during the restore;" **(e.g., see column 7, lines 18-38; column 8, lines 56-61).**

"preserving the data content of clone by not allowing it to be overwritten by host writes during the restoring step." **(e.g., see column 1, lines 61-64; column 20, lines 4-7).**

15. In regard to claim 15, Young teaches:

A program product **(e.g., column 4, lines 17-19)** for use in a data storage environment and being for protecting data content during restoration of data from a second volume of data to a first volume of data," **(e.g., see column 1, lines 61-64; column 7, lines 30-38; element 4 in Fig. 1).**

"wherein the data storage environment includes:"

"a data storage system having a first volume of data denominated as the source being stored on a data storage system **(column 4, lines 11-15; element 6 in Fig. 1)**, and a second volume of data denominated as the clone and which has data content that is a

copy of the data content of the source being stored on the data storage system;" **(e.g., see column 4, lines 11-15; element 8 in Fig. 1).**

"the program product includes computer-executable logic contained on a computer-readable medium and which is configured for causing a computer to execute the steps of:" **(e.g., see column 25, lines 1-31; column 27, lines 38-46).**

"restoring the source by copying data content from the clone to overwrite the data content of the source;" **(e.g., see column 11, lines 55-62).**

"allowing host reads and writes to the source during the restore;" **(e.g., see column 7, lines 18-38; column 8, lines 56-61).**

"preserving the data content of clone by not allowing it to be overwritten by host writes during the restoring step." **(e.g., see column 1, lines 61-64; column 20, lines 4-7).**

11. In regard to claim 24, Young teaches:

"An apparatus **(e.g., column 2, lines 49-50; Fig. 2)** for use in a data storage environment and being for managing data content during restoration of data from a second volume of data to a first volume of data,

"wherein the data storage environment includes:" **(column 7, lines 30-38; element 4 in Fig. 1).**

"a data storage system having a first volume of data denominated as the source being stored on a data storage system **(column 4, lines 11-15; element 6 in Fig. 1)**, and a second volume of data denominated as the clone and which has data content that is a copy of the data content of the source being stored on the data storage system or on another data storage system;" **(column 4, lines 11-15; element 8 in Fig. 1).**

"the apparatus including:"

"means for restoring the source by copying data content from the clone to overwrite the data content of the source;" **(column 11, lines 55-62).**

"means for receiving a host write request during the restoring step;" **(column 7, lines 18-38; column 8, lines 56-61).**

"means for determining extents on the source that would be affected by the host write request if carried out;" **(column 15, lines 34-41; Fig. 5a).**

"means for setting an indicator to indicate that the extents need to be re-copied if any extents affected are involved in the restoring step." **(column 15, lines 34-41; Fig. 5a).**

Response to Applicant's Remarks

In regard to rejection of claims under obviousness type double patenting, the Applicant has requested that the double patenting rejection be held in abeyance until such time as one of the referred-to patent applications issues and a comparison of the issued claims may be made. However, the Patent Office cannot hold the double patenting rejection in abeyance. The Applicant may overcome an obviousness double patenting rejection by filing a terminal disclaimer, amendment, or cancellation of the claim(s).

*In regard to rejection under 35 USC § 112 and limitation: "...*extents of the clone that are different from the clone and the source..." *Applicant (on page 9 of his Remarks) states:* "Applicant respectfully disagrees in part with the statement made in the Office Action With regard to term "extent of the clone..""

*However, as was stated in the previous Office Action and is highlighted above, the concern is not the "*extents of the clone" but the "extents of clone that are different from the clone and the source". *The intent of this limitation might have been: the extents of clone that are different between the clone and the source.*

In regard to prior art rejections and Young reference, the Applicant (page 11 of Remarks) states: "A reading of the referred to section of Young reveals that Young teaches that a master store can be restored "to a particular point in time by overwriting the data in the master store with the data from the appropriate shadow store." However, with reference to preserving the data content of the clone during the restore step, Young is silent with regard to this claim element."

The Examiner disagree, Young reference may not specifically uses the word preserve in his disclosure but the function of preserving the data in shadow store is taught by Young:

"According to a first aspect of the present invention there is provided a computer memory storage system with a point in time copy function which enables multiple point in time copies to be taken of data stored by a master store, to be maintained independently of the master store, and to each be maintained independently of the other point in time copies." (Col. 1, lines 59-64).

"Thus, when at S40 in FIG. 10, the point in time copy controller 4 receives (via the user interface 21 or the network interface 83) a request from a user to make a point in time copy then, at S41 in FIG. 10, the point in time copy controller a determines whether the user has selected to overwrite the earliest point in time copy. If the answer a S41 is yes, then, at S42 in FIG. 10, the point in time copy controller 4 updates the existing point in time copy defined by the point in time copy data stored in the shadow store 8-1 and the bitmap store 10-1 by overwriting any data blocks of the shadow store with the corresponding data blocks of the master store 6 where the corresponding bit of the shadow bitmap is 1 indicating that the data has changed since the last point in time copy was produced. In this case, the earlier point in time copy is lost.

If, however, the user has selected not to overwrite the earliest point in time copy then, at S43 in FIG. 10, the point in time copy controller 4 creates a fresh point in time copy using the shadow store 8-2 and the bitmap store 10-2 in the manner described above with reference to FIGS. 3 to 5e where the dependent mode is selected and in the manner described above with reference to FIGS. 6a to 8b where the independent mode is selected." (Col. 11, lines 8-30).

"...This enables a user to access various different point in time copies and also enables a user, if necessary or desired, to restore the data in the master store 6 to the data stored at a particular point in time by overwriting the data in the master store 6 (or a copy of the data in the master store 6) with the data from the appropriate shadow store 8 where the corresponding bitmap indicates that the data in the corresponding block in the master store 6 has changed since the required point time copy was produced..." (Col. 11, lines 53-59).

In summary, Young teaches point-in-time copies of master store at different times (e.g., when a write or update in master store) are maintained in shadow store. The master me be recovered to any of these point-in-time if desired. Before a block of data in master is overwritten, this current (or old) data is being copied and maintained in shadow store and maintain in a fresh point-in-time copy. The older point-in-time copies in the shadow store are maintained unless the user selects or allows it to be overwritten. Therefore, Young teaches preservation of data on the shadow store at various point-in-time and master stores can be restored to any specific point-in-time if desired. Therefore, the Examiner maintains his position.

Conclusion

Any inquiry concerning this communication should be directed to Hashem Farrokh whose telephone number is (571) 272-4193. The examiner can normally be reached Monday-Friday from ***8:00 AM to 5:00 PM.***

If attempt to reach the above noted Examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Donald A Sparks, can be reached on (571) 272-4201.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published application may be obtained from either private PAIR or Public PAIR. Status information for unpublished application is available through Private PAIR only. For more information about PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBS) at 866-217-9197 (toll-free).

HF

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2006-05-02

DONALD SPARKS
SUPERVISORY PATENT EXAMINER